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The cocoon of *P. gloverii* differs from that of *P. cecropia* in being perhaps tougher and paler, more glistening in hue, though of the same form and size. It it always quite distinguishable from that of *P. cecropia*. The cocoon of *P. columbia* only differs from that of *P. gloverii* in its smaller size, and the more distinct patches of silk material scattered on the outside; it is of the same form as in the two other species.

I am indebted to Mr. J. L. Barfoot for a number of cocoons of *P. gloverii*, from near Salt Lake City, Utah, and to Prof. C. H. Fernald and Mr. Anson Allen, of Orono, Maine, for the cocoons and imagoes of *P. columbia*.

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RECENT LITERATURE.

HUXLEY'S MANUAL OF THE ANATOMY OF INVERTEBRATED ANIMALS.[1]—The great advances, within the past ten years, in our knowledge of the anatomy of animals, renders the appearance of this book timely. No one is better fitted than Prof. Huxley to prepare such a manual, which should be authoritative, compact, clearly written, and catholic in its treatment. This book, together with Siebold's Anatomy of the Invertebrates, will form a condensed library for the teacher and student. Prof. Huxley has made a good innovation on the plan of similar books in introducing detailed and more or less illustrated accounts of the anatomy of common types of animals, so that with the aid of this manual the ordinary student can, in a measure, become his own teacher. As a body of well digested facts, clearly and elegantly stated, this book is without a rival.

The classification we should find some fault with, as we do with some of Prof. Huxley's work in this direction, owing, we think, to an inherent lack of perspective in the learned author's mind. For example, the Cœlenterates are described near the beginning of the book, and the Echinoderms near the end; the worms, crustacea, insects, the Polyzoa, Brachiopods and molluscs are then described, and finally we are led to the Echinoderms; the Ascidians coming last, the work closing with the *Peripatidea*, *Myzostomata*, *Enteropneusta*, *Chætognatha*, *Nematoidea*, *Physemaria*, *Acanthocephala* and *Dicyemida*. This arrangement may be in part accounted for by the fact that the book was apparently two years in going through the press, and two years has made a great difference in our knowledge of these last-named groups; but there is no good reason, it seems to us, for separating certain groups so far from those to which they are evidently allied, even in a book like this, in which systematic zoölogy is left out of account. The defect is due, we think, to the analytic rather than synthetic turn of mind of its author, and not to the want of adequate knowledge now in the hands of the naturalist.

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[1] *A Manual of the Anatomy of Invertebrated Animals.* By THOMAS H. HUXLEY. New York. D. Appleton & Co. 12mo. With figures. $2.50.

Few errors of statement will probably be found in this book. We may be allowed to refer to some points to which we should take exception: "Foraminifera," says our author, "are *Monera* of the *Protogenes* type." It is now proved that *Foraminifera* have a nucleus, as stated near the close of this manual, and should be, as they always have been, retained among the *Radiolaria;* why Prof. Huxley should place them among the Monera, which have no nucleus, is a matter of surprise. He regards Eozoön as an incrusting form of Foraminifer, not stating the serious objections that have been made as to its animal nature, and then adopts, as possible, Wyville Thompson's suggestion, that "the enormously thick azoic slaty and other rocks, which constitute the Laurentian and Cambrian formations, may be to a great extent the metamorphosed products of foraminiferal life"!! This really takes our breath away. We leave the matter in the hands of the geologists. Then it is added oracularly, "And there may be no part of the common rocks, which enter into the earth's crust, which has not passed through a living organism at one time or another." Are we not here dealing with a physiology and anatomy not of our earth?

Spongilla is stated to be, among sponges, "the sole fresh-water form." Prof. H. James Clark's *Siphydora echinodes* is said by him to be common in ponds and streams in the United States (Mind in Nature). It is stated that the embryos of *Radiolaria* are "provided with a single flagellam;" in *Collosphæra,* however, there are two. The young Limulus is said, as "Dohrn points out" (1871), to bear a remarkable resemblance to the trilobite *Trinucleus;* this was, however, pointed out by Packard, at some length, with figures both of young *Limulus* and *Trinucleus* nearly a year previous, in this journal for October, 1870. Again, Huxley states, speaking of the metamorphosis of *Atax bonzi,* "The proper vitelline membrane bursts into two halves, much as in *Limulus,* and the deutovum emerges." In *Limulus,* assuredly, the membrane which is referred to as splitting open is the chorion.

The classification of the Arthropoda is essentially artificial, and in it we doubt if the author evinces his usual acumen, certainly a feeble grasp of the subject. The trilobites are associated with the tardigrades and Pentastomida into a division "I. without Gnathites." The trilobites by general analogy are obviously to be associated with the *Merostomata* and Limulus, and, since the publication of this work, Mr. C. D. Walcott has discovered that they possessed "four pairs of manducatory jaws;" and why should *Trilobita* be associated thus with *Tardigrada* and *Pentastomida* when both the latter groups are undoubtedly low Arachnids?

Again, the Arachnida are placed in a division with "pediform Gnathites," but in what respect are the mandibles and maxillæ of spiders and mites any more pediform than those of insects and Myriopods? And in the sucking Myriopods we have an entire family with mouth parts not much higher in grade than those of the Tardigrades and Pentastomida.

The author shows a tendency to coin terms for parts already named, thus *gonapophysis* is used instead of Lacaze Duthier's elegant term *rhabdite* for the blades of the ovipositor. The term *Echinopœdium* is used for the larva of Echinoderms, which exactly corresponds to Packard's *Cephalula*, proposed in this journal (May, 1875, p. 283, and Life Histories, p. 94) and extended to embrace a similar phase in molluscs and worms, as well as Echinoderms. But these are the merest blemishes in a work quite indispensible to students, and the production of one whose general accuracy of statement is universally recognized.

HUNT'S CHEMICAL AND GEOLOGICAL ESSAYS.[1] — No changes appear to have been made in the text beyond the correction of typographical errors, but in the preface to the second edition, Prof. Hunt takes the opportunity to farther notice the question of the temperature of the earth's surface in former geological periods. He concludes that a reduction in the weight of the atmosphere in early geological times, by causes to which he alludes, must have produced a considerable refrigeration of climate, and a still greater cooling of the globe by the diminution of the proportion of carbonic dioxyd contained in the atmosphere. He concludes as follows: "Geographic changes, though a true cause of local variations of climate, and adequate to explain the greater refrigeration of certain areas since the commencement of the pliocene, are not sufficient to account for the warmer climates of previous ages, and we conclude that the cause of these is to be found in the former greater volume and different chemical constitution of the atmosphere, as already set forth.

"This view is opposed to the hypothesis maintained by many geologists of an alternation of warm and glacial climates at the surface of the earth, repeated from the earlier times. Dawson and Heer, however, from the study of the fossil floras found in arctic regions, from the devonian to the miocene, conclude that palæontology affords no evidence of such a condition of things, and the observations of McCoy, Hector and Hutton in the southern hemisphere lead them to similar conclusions. The nurseries of these successive northern floras appears to have been in the arctic regions, and their spread southward would, according to Dawson, be due to continental elevations, bringing about, at irregular periods, a cooler climate in the northern temperate zone.

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[1] *Chemical and Geological Essays.* By THOMAS STERRY HUNT, LL.D., etc. Second edition. Revised, with additions. Salem, S. E. Cassino, Naturalist's Agency. 1878. 12mo, pp. 489.